Welcome To The

FACA

MSTRS Quarterly Meeting

Auburn Hills, Michigan

October 2000

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Co-Chair, FACA OBDII Workgroup

A NEW PARADIGM

OBDII FACA

WORKGROUP

FUTURE OF OBDII

Slide Assistance by Ed Gardetto

EMISSION BASED TESTING

TECHNOLOGY BASED TESTING

MAJOR ACTIVITIES

- **FACA**
- **WEBER STATE UNIVERSITY**
- **COLORADO STATE UNIVERSITY**
- **PILOT PROJECT**
- **TESTING AT COLORADO DEPT. OF HEATH & ENVIRONMENT**

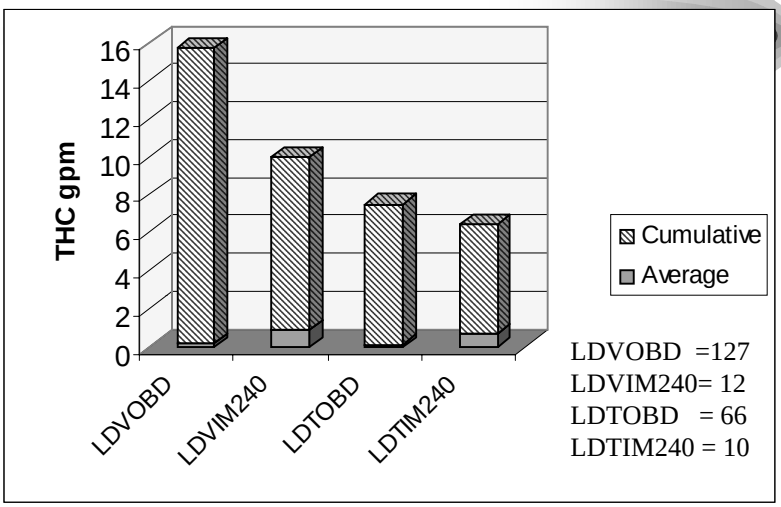
EPA OBD Tailpipe Test Program

- FTP Testing vs. OBD and IM240
  - manufacturer production weighted sample
- Goal: 200 vehicles by end of Sept., '99
- Aid in development of SIP credits for OBD I/M (required in 01/01/01)
- FACA advised EPA on testing protocol
- Testing of vehicles at high mileage continues (30 vehicles this FY)

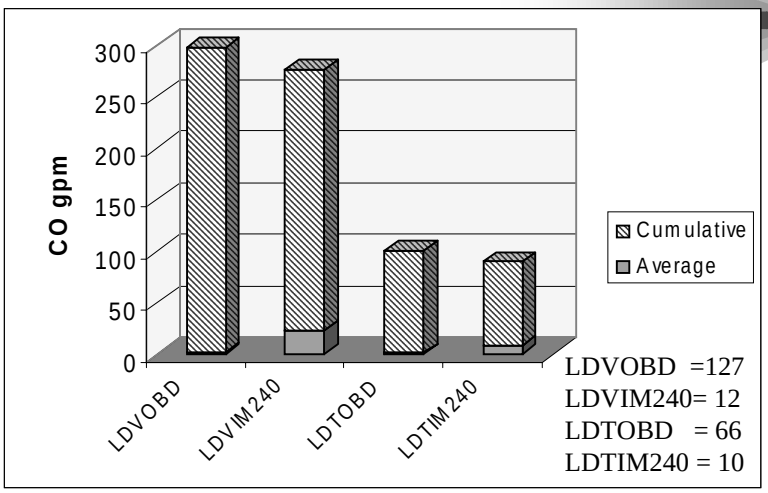
EPA FTP Testing Test Sequence

- Preconditioning (LA-4)
- IM240
- Drain and fill with Indolene
- Preconditioning (LA-4)
- 12 hour soak
- FTP dyno test (no evap. test)
- IM240
- Repair

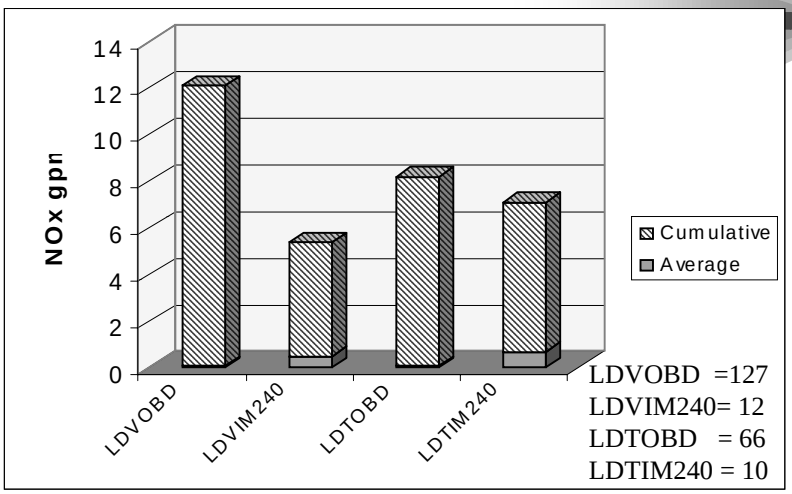
THC Emissions Reductions OBD and IM240



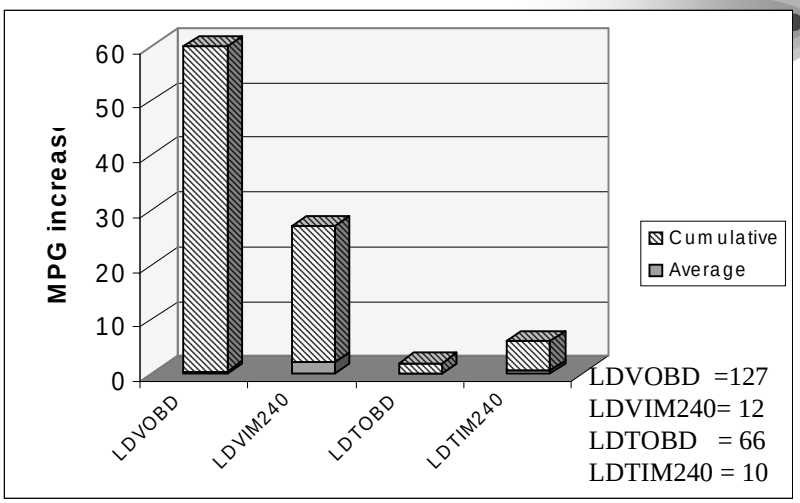
CO Emissions Reductions OBD and IM240



NOx Emissions Reductions OBD and IM240

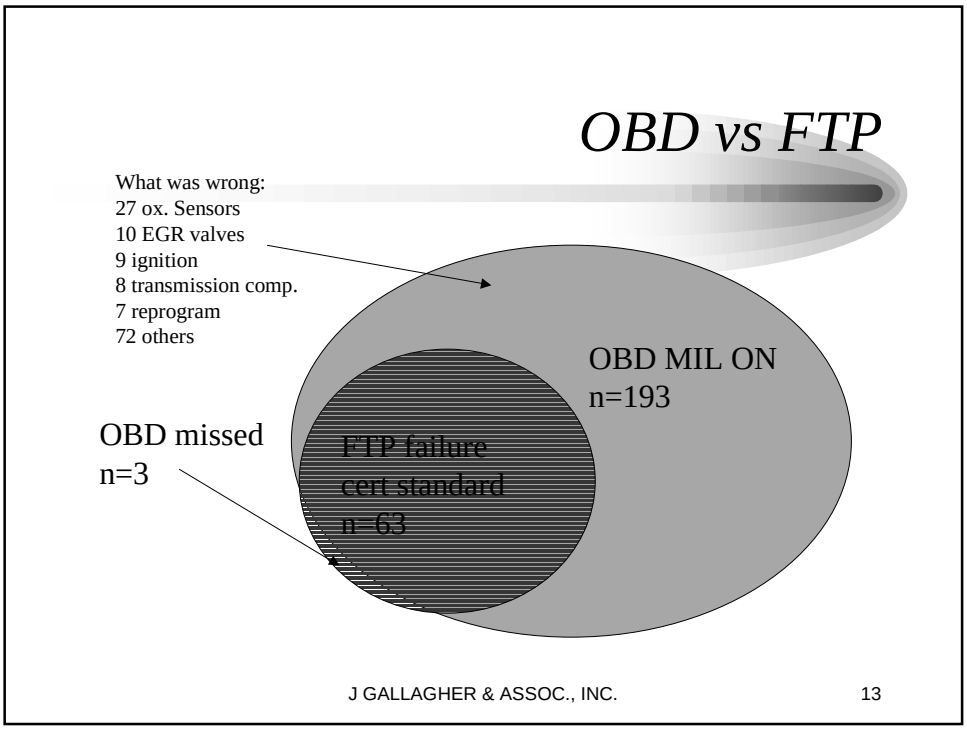


MPG Increases OBD and IM240



Other Information

- OBD Repair costs:
  - LDV = $252; LDT = $284
  - LDV = $287; LDT = $322 w/o nonrepaired vehicles
  - If adjusted waiver limit is used 94% of LDVs would have been repaired and 91% of LDTs


OBD vs FTP
What was wrong:
27 ox. Sensors
10 EGR valves
9 ignition
8 transmission comp.
7 reprogram
72 others
OBD MIL ON
n=193
OBD missed
n=3
FTP failure
cert standard
n=63
J GALLAGHER & ASSOC., INC.
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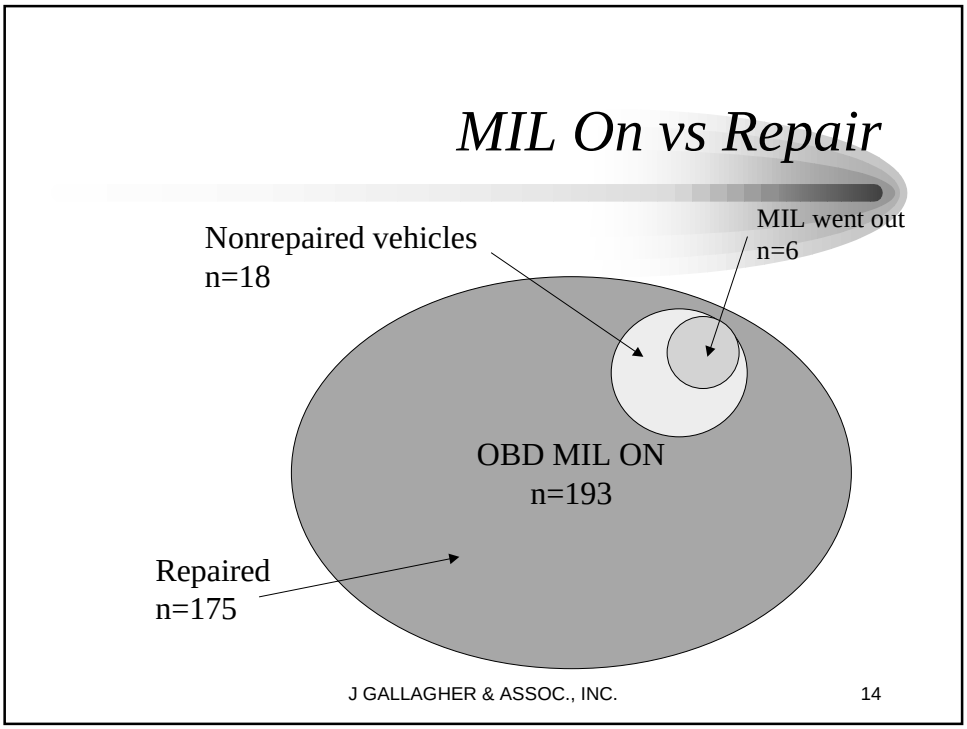
MIL On vs Repair
Nonrepaired vehicles
n=18
MIL went out
n=6
OBD MIL ON
n=193
Repaired
n=175
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OBD's Ability to Identify High-Emitters

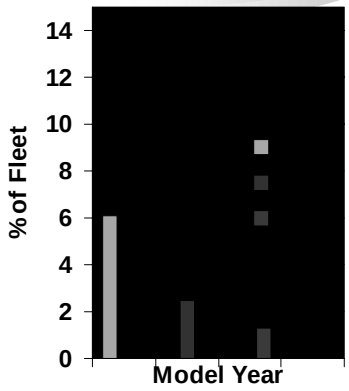
- 15 LDV found with over twice cert. Standard tailpipe emissions
- 14 with MIL on (missed vehicle failed 240)
- 5 failed the IM240
- 5 LDTs found with twice cert. Standard
- 4 with MIL on (missed truck failed 240)
- 5 failed the IM240

EPA data from Wisconsin OBD I/M lane

- 167,768 vehicles scanned from Sept, 98 to Dec, 99
- Three areas investigated
  - MIL rate
  - Readiness status
  - Data Link Connection location

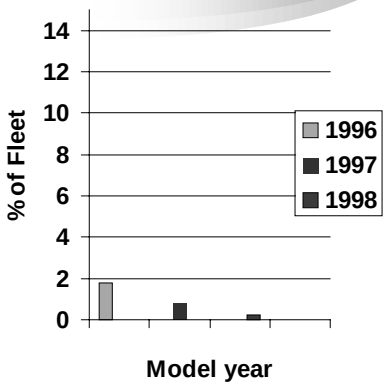
Wisconsin OBD Readiness Status

- 1996 “Not Ready” driven by one manufacturer (3.1% w/o this manufacturer)
- 1996 rate drops to 2.2% if any 2 monitors ignored and known problems
- Overall “Not Ready” drops to 0.9% (from 3.2%)



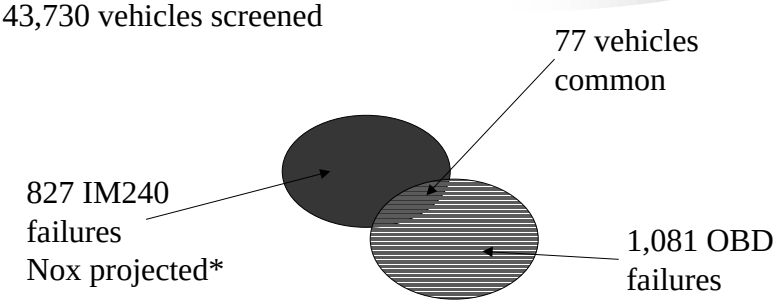
Wisconsin MIL Information

- Mileage and evolving OBD technology driving trend
- Evap, Misfire, Ox sensor and transmission are most common (65%) cause of MIL illumination
- Projecting MIL rate of approximately 8% at 100k if current trend holds



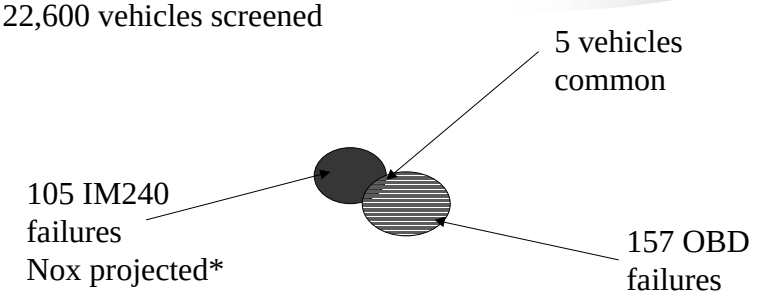
IM240 vs OBD
Field data from Wisconsin

1996 MY
43,730 vehicles screened



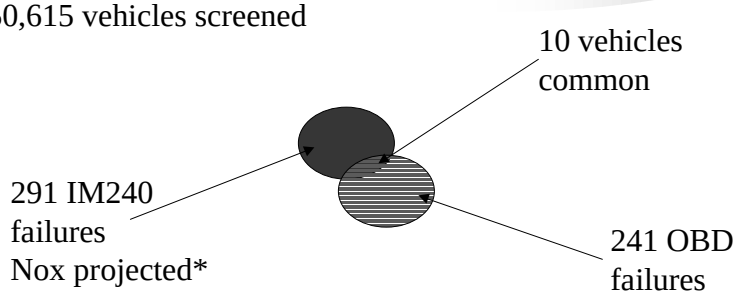
IM240 vs OBD
Field data from Wisconsin

1997 MY
22,600 vehicles screened



IM240 vs OBD Field data from Wisconsin

1998 MY
50,615 vehicles screened



EPA Evaporative OBD Test Program

- 30 vehicles tested
- In general, OBD II evap monitors work on in use vehicles
  - 24 of 27 with induced failures detected
    - includes 2 with 0.020 in. leaks)
- OBD II evap monitors are a replacement for functional I/M evap tests (purge and pressure)

EPA Evaporative OBD Test Program Results

- Repair effects (benefits) of OBD II evap are substantial:
- SHED Data Summary (from 26 vehicles):
  - Running loss avg. delta 5.57 g/m (0.05 g/mi std)
  - 1 hr hot soak loss avg. delta 5.8 g (2.0g std hs+dl)
  - 24 hr diurnal loss delta 11.7 g

OBD and High Emitters

- 196 vehicle/trucks tested
  - 63 over applicable cert. Standard
  - 60 caught by OBD
    - 22 caught by IM240 (lab)
  - 18 vehicles with MIL on and no repair
  - 23 vehicles with MIL on and no repair in lab but expected to be repaired in field
    - misfire and fuel control

Pending Activities

- **OBD EVALUATION**
  - **Cost Effectiveness**
  - **Errors of Omission**
  - **Errors of Commission**
- **NO PROBLEM FOUND**